



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/001,877	11/16/2001	Arthur T.G. Fuller	7000-104	3406
27820	7590	01/26/2005	EXAMINER	
WITHROW & TERRANOVA, P.L.L.C.			LU, JIA	
P.O. BOX 1287			ART UNIT	PAPER NUMBER
CARY, NC 27512			2634	

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/001,877

Applicant(s)

FULLER ET AL.

Examiner

Jia W. Lu

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 16 November 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 34 is/are allowed.
- 6) ☒ Claim(s) 1-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/16/01.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Objections*

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claim 17-33 been renumbered 18-34.

2. Claim 17 is objected to because of the following informalities:
  - a. Letter divisions within claim 18 are mislabeled. Parts a-b, a-e have been relabeled a-g.
  - b. The "transceiver" in present claim (line 1) should comprise of nouns.
    - i. Part c should begin with "receiver for";
    - ii. Part d should begin with "subtractor for";
    - iii. Part e should begin with "demodulator for";
    - iv. Part f should begin with "processor for";
    - v. Part e should begin with "creator for".

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1, 2, 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0,367,932, in view of US patent 6,522,747.
  - a. Regarding claim 1, patent '932 discloses a method for filtering a signal, comprising filter coefficient calculations (page 4, lines 6-9) for a combined time invariant and time variant FIR filter (page 7, lines 18-22) and filter coefficient storage (page 7, lines 6-9). '932 fails to disclose the use of a polyphase decomposition of filter coefficients, however, '747 discloses the use of polyphase decomposition in FIR filters (column 4, lines 63-65). The use of polyphase decomposition is used to efficiently perform downsampling and upsampling because it can reduce the number of computations required in the coefficients multiplications (see column 4 lines 65 – column 5 line 10), therefore it is obvious to one skilled in the art to employ its use in the creation of an output signal.
  - b. Regarding claim 18, patent '747 discloses a system as described in claim 1 above comprising downsampling (column 4, lines 57-61),
  - c. Regarding claim 2 and 19, patent '747 discloses a method of filtering based on channel estimation (column 6, lines 4-7).

Art Unit: 2634

4. Claims 4 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0,367,932 as applied to claim 1 above, and further in view of U.S. Patent 5,602,762. Patent '762 discloses the use of a higher sampling rate at the output than at the input, and it would have been obvious to one skilled in the art to use a higher sampling rate at the output of a combined FIR filter in order to obtain higher accuracy and efficiency.
5. Claims 5 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0,367,932 as applied to claim 1 above, and further in view of U.S. Patent Application 20020051503. Application '503 describes the downsampling of data in an FIR filter system (figure 1, element 210) before it is filtered. It would be obvious to one skilled in the art to use downsampling in order to produce filter calculations at a lower sampling rate.

### ***Allowable Subject Matter***

6. Claims 3, 6-16, 20, 23-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
7. Claim 34 is allowed.

### ***Conclusion***

Art Unit: 2634


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jia W. Lu whose telephone number is 571-272-6042.

The examiner can normally be reached on Mon- Fri, 9:30AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571)272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jia Lu  
Examiner

  
**STEPHEN CHIN**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 2800**